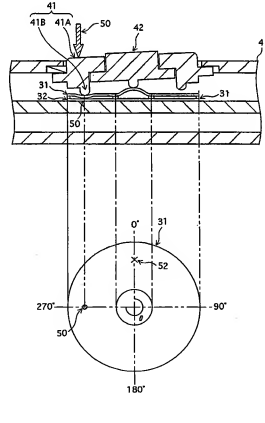
REMARKS

The present invention provides a directional input device that can be utilized in a relatively simply manner by an operator to input electronic signals in a quick and efficient manner without adding any unnecessary complex mechanical structure.

As shown in Figure 3 of our disclosure, we provide a circular disc operating member 41 that is capable of rotating and being depressed to identify a specific location, such as a portion 50. When voltage is applied through a resistive layer 31 and a conductive layer 32, a signal can be generated identifying the specific location such as 270°. In addition, another operative member or central button 42 can be pressed downward to in essence, provide an entry for selecting the particular position. As can be appreciated, a display or a menu can be visually seen to complement the directional input unit.

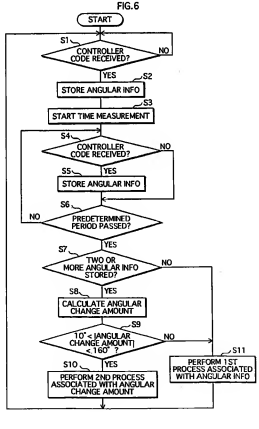
FIG.3



Upon the selection of a specific rotational location, an entry controller code could be generated that is responsive to the angular information to identify a particular operation to be executed.

As is graphically seen in the flowchart of Figure 6, it is possible to enter and store two or more pieces of angular information and by using a timeline, plus for example, an algorithm to minimize erroneous movements (hand shaking), the structure in Figure 3 could be utilized to perform the expected conventional entering of a signal based on, for example, a lookup table associated with the first angular information or advantageously with the same structure, provide a second processing associated with the second angular information within a predetermined time period that is entered to produce an appropriate controlled response, see steps S11 and S10.

FIG.6



The operation of our remote controller is described in Paragraphs [0110] through [0153] in our published patent application 2007/0273649. Various examples can be realized as set forth in our specification.

For purposes of our amended independent Claims 1, 18 and 19, our inventors recognize, as set forth in Paragraph [0008] of our U.S. Patent Publication, that there is a limitation in conventional correctional input devices, that employed an operating member to make a directional input in that it was not capable of making a rotational input other than a one to one association between directions and processes.

As defined in our claims, we permit a user to specify any one of a plurality of processes exceeding the number of directions available for input with the use of the operating member, to thereby increase the number of processes that can be available while maintaining a relatively simple apparatus and process of using for an operator.

Our operating member is usable to make a directional input but not usable to make a rotational input. When the directional input unit receives an input specifying one direction followed within a predetermined time period by an input specifying another direction, the calculating unit calculates the amount of change from the one direction denoted as a first direction to the other direction denoted as a second direction. A judging unit judges whether the calculated amount of change falls within a predetermined range. The processing unit performs a first process associated with each of the first and second directions when the judging unit judges negatively, and performs a second process associated with the amount of change when the judging unit judges affirmatively.

According to Claim 1, the processing unit switches the process to be performed between first and second processes depending on the amount of change from a first direction, which is

one direction specified by an input, to a second direction, which is another direction specified by an input subsequently received within a predetermined time period from the time at which the input specifying the first direction was received.

More specifically, if the amount of change falls out of the predetermined range, the processing unit performs a first process associated with the first direction and another first process associated with the second direction. On the other hand, if the amount of change falls within the predetermined range, the processing unit then performs a second process associated with the amount of change. This arrangement makes it possible to associate processes with rotation amounts relating to rotational inputs, although a user cannot directly make any rotational input with the use of the operating member.

In the case where the amount of change between two successively input directions falls within the predetermined amount, it is required to wait to make a later input at least for the predetermined time period. Yet, in return for this simple requirement, the invention recited in Claim 1 ensures that all the directions that can be input with the operating member are duly associated with any predetermined processes set in the user interface system.

The processing unit can switch a process to be performed, so that a significant advantage is achieved by enabling a user to specify, by making specific directional input(s) using a simple operating member, any of processes exceeding the number of directions available for input with the use of the operating member.

The Office Action rejected Claims 1, 2, 5-7 and 18-19 as being obvious over *Hagiwara et al.* (U.S. Patent Publication 2001/0048422) in view of *Tsuk et al.* (U.S. Patent Publication 2003/0076301) under 35 U.S.C. §103.

As noted in the MPEP at §2143.02:

> A rationale to support a conclusion that a claim would have been obvious is that all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded nothing more than predictable results to one of ordinary skill in the art. *KSR International Co. v. Teleflex Inc.*, 550 U.S. ___, ___, 82 USPQ2d 1385, 1395 (2007); *Sakraida v. AG Pro, Inc.*, 425 U.S. 273, 282, 189 USPQ 449, 453 (1976); *Anderson's-Black Rock, Inc. v. Pavement Salvage Co.*, 396 U.S. 57, 62-63, 163 USPQ 673, 675 (1969); *Great Atlantic & P. Tea Co. v. Supermarket Equipment Corp.*, 340 U.S. 147, 152, 87 USPQ 303, 306 (1950). (underline added)

The *Hagiwara et al.* reference taught a disk-like operational body 3A that could be operated by an operator's hand and supported by a vertical shaft or support member 12. Rotational movement was translated through a series of X and Y resistors in a common plane, while perpendicular movement of the shaft downward activated a micro switch, for example to enter or select a particular position defined by the relative values of the variable resistors. The selection of a particular location, for example, a character in the alphabet if you are replacing the conventional keyboard, is exclusively on having an angular region coincide with the position of the operational body of the controller. Depression of the activated micro switch enters a value as shown in Figures 4A and 4B.

The Office Action acknowledged that the *Hagiwara et al.* reference only taught the ultimate position of the operational body of the controller and its subsequent activation by a micro switch. The Office Action acknowledged on Page 3 that *Hagiwara et al.* failed to teach our claimed calculating unit, judging unit and processing unit as specifically defined in Claim 1.

The Office Action contended, however, the *Tsuk et al.* reference was capable of teaching the same function of a calculating unit, judging unit and processing unit as defined in our claims. The rationale for combining *Tsuk et al.* with the *Hagiwara et al.* reference was simply to increase

the scrolling speed of the input device of *Hagiwara et al.* by an acceleration factor determined by the *Tsuk et al.* teaching.

An example of a *Tsuk et al.* embodiment can be seen in Figure 9, where it is desired to scroll through a list, such as songs, by manipulation of a rotational input device 910.

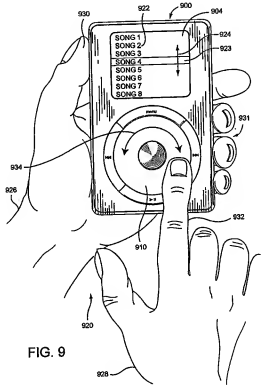
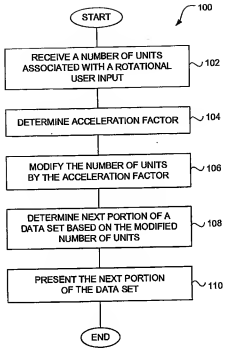


FIG. 9

The Office Action rejection contended that our calculating unit of Claim 1 was defined by Paragraph [0040], which defines the flow diagram of Figure 1, as follows:



Accordingly, a user activates a rotational movement of a user input and counts a number of items or units that are associated with the movement of the rotational user input to permit a determination of an acceleration factor. The acceleration factor will be based on the speed of the rate of rotation, for example down the list of songs in Figure 9 above a certain criteria, and the subsequent speed of linear movement down the list of songs would increase to thereby permit a faster scrolling processing on the screen.

The Office Action asserted that this feature constituted the judging unit of our invention by defining or determining an acceleration factor.

Additionally, the Office Action contended that the further scrolling through a next portion of a data set or list of songs could be appropriately set to a presentation of a next portion of the data set and that this would constitute our processing unit.

Our claim defines a calculating unit which calculates an amount of change from a first direction to a second direction. The calculating unit is operable when the directional input unit receives an input specifying the first direction followed within a predetermined time period, of an input specifying a second direction. *Tsuk et al.* teaches an acceleration factor which involves a change in velocity relative to the same direction. This is a well known derivative in calculus of time and distance. But, it does not teach a first direction while specifying a second direction. You can open a padlock by rapidly moving a spinning input dial or slowing down the spinning input dial to numerical locations. You can have an increasing acceleration or a deceleration in, for example, by a clockwise movement. But this would not be a second direction of a counterclockwise movement and if it was desired to change the acceleration in the counterclockwise movement, to speed up the return of a scroll movement through the same list of numbers, again the acceleration rate would be derived from movement in the same direction.

Our judging unit determines when there is this change from a first direction to a different second direction within a predetermined range, which is not taught by the *Tsuk et al.* reference.

Finally, the processing unit of our Claim 1 is to enable a first distinct first process associated with each of the first and second directions if the judging unit finds that there has not been a calculated amount of change within a predetermined range. However, our processing unit can perform a second separate process associated with the amount of change if the judging unit determines that the amount of change falls within a predetermined range.

Tsuk et al. is incapable of teaching such an algorithm which could be implemented in the *Hagiwara et al.* reference. Accordingly, *Tsuk et al.* fails in rectifying the deficiencies of the *Hagiwara et al.* disclosure.

To a person of ordinary skill in the field, *Hagiwara et al.'s* teaching, for example of a selection of an alphabetical character to be displayed, is to select exclusively an angular region to coincide with the ultimate moved position of the operational body of the controller. There is no selection made based on the amount of angular change between a first and a second direction.

Additionally, the *Hagiwara et al.* teaching discloses an input device whose process is to be executed always in association with the ultimate position of the operational body of the controller. Perpendicular movement of the controller along the Z action is the entry after the ultimate position has been arrived at.

Accordingly, the *Hagiwara et al.* reference does not disclose any similar judging unit to perform a process associated with the amount of change or a subsequent process associated with the ultimate position determined by the operational body. As described above, the *Tsuk et al.* disclosure to a person of ordinary skill in this field, would teach such a person to determine a next portion of the data set that is being scrolled through, based on the amount of change of rotational movement during a rotational input. That is, the determination is not based exclusively on the direction(s) specified by a user input. *Tsuk et al.* fails to disclose any configuration to perform a first process associated with each of first and second directions.

It is further noted that without any disclosure of performing a first process associated with each of the first and second directions, *Tsuk et al.* would fail to disclose a configuration to perform a first process associated with each of the first and second directions when the amount of directional change falls out of a predetermined range, nor would it perform a second process associated with the amount of change when the amount of directional change falls within the predetermined range.

Accordingly, it is submitted that *Tsuk et al.* is silent as to any teaching of a configuration corresponding to the "processing unit" recited in our Claim 1.

Neither *Hagiwara et al.* nor *Tsuk et al.* teach that "with an operating member that is usable to make a directional input but unusable to make a rotational input, the number of directions that can be input is limited and, therefore, the one-to-one association between directions and processes will leave no available directions left unassociated while there are some more processes yet to be associated." Therefore, any combination of the functions of *Hagiwara et al.*, and *Tsuk et al.* would not render a configuration allowing a user to specify any of several processes exceeding the number of directions available for input with the use of an operating member.

Claims 3 and 4 were basically a repeated rejection from the First Office Action, only with the addition of *Tsuk et al.*, in an attempt to supplement the inadequacies of the *Hagiwara et al.* reference. Clearly the *Trent, Jr. et al.* (U.S. Patent No. 7,466,307) reference is still only replied upon for a reference direction from which angles are measured. It does not address nor teach the specific features of our present invention as set forth in our claims, and as supported by our flowchart in Figure 6, discussed above.

Applicant submits that the *Tsuk et al.* reference is still lacking, and the combination of the three references do not justify an obviousness rejection.

Claim 8 was rejected as being obvious over a combination of *Hagiwara et al.* and *Tsuk et al.*, in view of the previously cited *Inoue et al.* (U.S. Patent Publication 2003/0085793).

The *Inoue et al.* reference was primarily cited for disclosing a physical configuration of an input device but did not rectify the deficiencies of either the *Hagiwara et al.* or the *Tsuk et al.* teachings.

Claims 9 and 11 were rejected as being obvious over the *Hagiwara et al.* and *Tsuk et al.* references in view of *Nguyen* (U.S. Patent No. 7,036,091).

Nguyen was cited for its teaching of a display that could provide a menu for a user but fails to address the distinguishing features defined in our currently pending claims.

Claim 5 was rejected over *Hagiwara et al.* and *Tsuk et al.* in view of *Duarte* (U.S. Patent Publication 2003/0043206).

Duarte was only cited for teaching a display unit capable of showing a plurality of files and folders in an annular array. It does not rectify the deficiencies of the principal references *Hagiwara et al.* and *Tsuk et al.*

Claims 12 and 13 were rejected as being obvious over *Hagiwara et al.* and *Tsuk et al.* in view of *Robbin et al.* (U.S. Patent Publication 2003/0095096).

Robbin et al. was cited for teaching a playback unit that could playback content with an audio adjustment of the volume output of the audio. Presumably, *Robbin et al.* would teach the clicking or buzzing sound feature described by *Tsuk et al.* to let a person monitor by his/her ears any rate of change of acceleration and an adjustment of the volume output. It does not, however, teach the features of our current claims.

Claims 14 and 15 were rejected as being obvious over *Hagiwara et al., Tsuk et al.* and further in view of *Yamaguchi et al.* (U.S. Patent No. 6,710,771).

Yamaguchi et al. was cited for a chart setting option with a table of scaling factors disclosed in a window. Such a combination of references, with regards to their functions, taught to a person of ordinary skill in the field, would not meet the criteria for a finding of obviousness to a person of ordinary skill in this field.

Claim 16 was rejected over *Hagiwara et al.* in view of *Tsuk et al.* in view of *SanGiovanni* (U.S. Patent Publication 2002/0101441).

While *SanGiovanni* discloses an option of displaying a spiral array, it does not address the deficiencies of the principal references.

Finally, Claim 17 was rejected over *Hagiwara et al.* in view of *Tsuk et al.* and *Goldenburg et al.* (U.S. Patent No. 6,636,197).

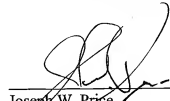
Goldenburg et al.'s teaching of a vinyl recording as an image on a display unit to permit an adjustment of the volume of the audio output does not provide to a person of ordinary skill in this field the advantages of our present invention.

It is believed that the present application is now in condition for allowance, and an early notification of the same is requested.

If the Examiner believes a telephone interview will assist in the prosecution of this case, the undersigned attorney can be contacted at the listed telephone number.

Very truly yours,

SNELL & WILMER L.L.P.



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